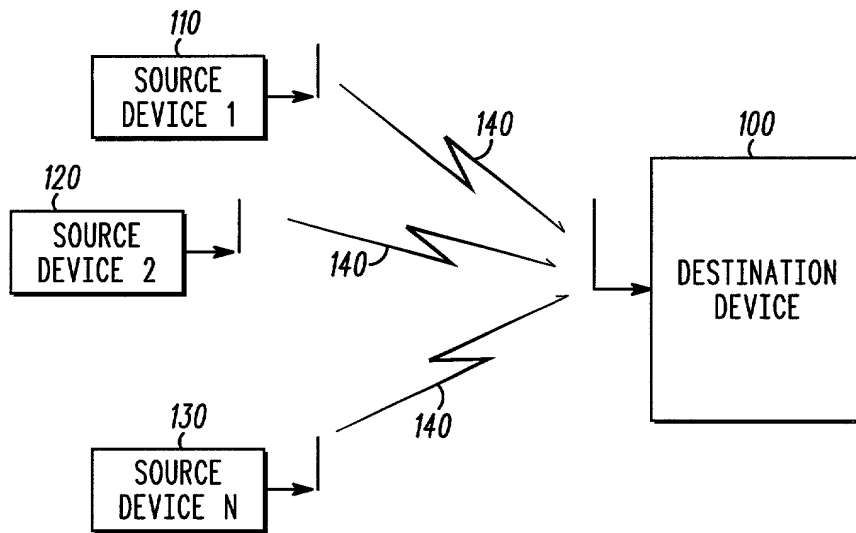
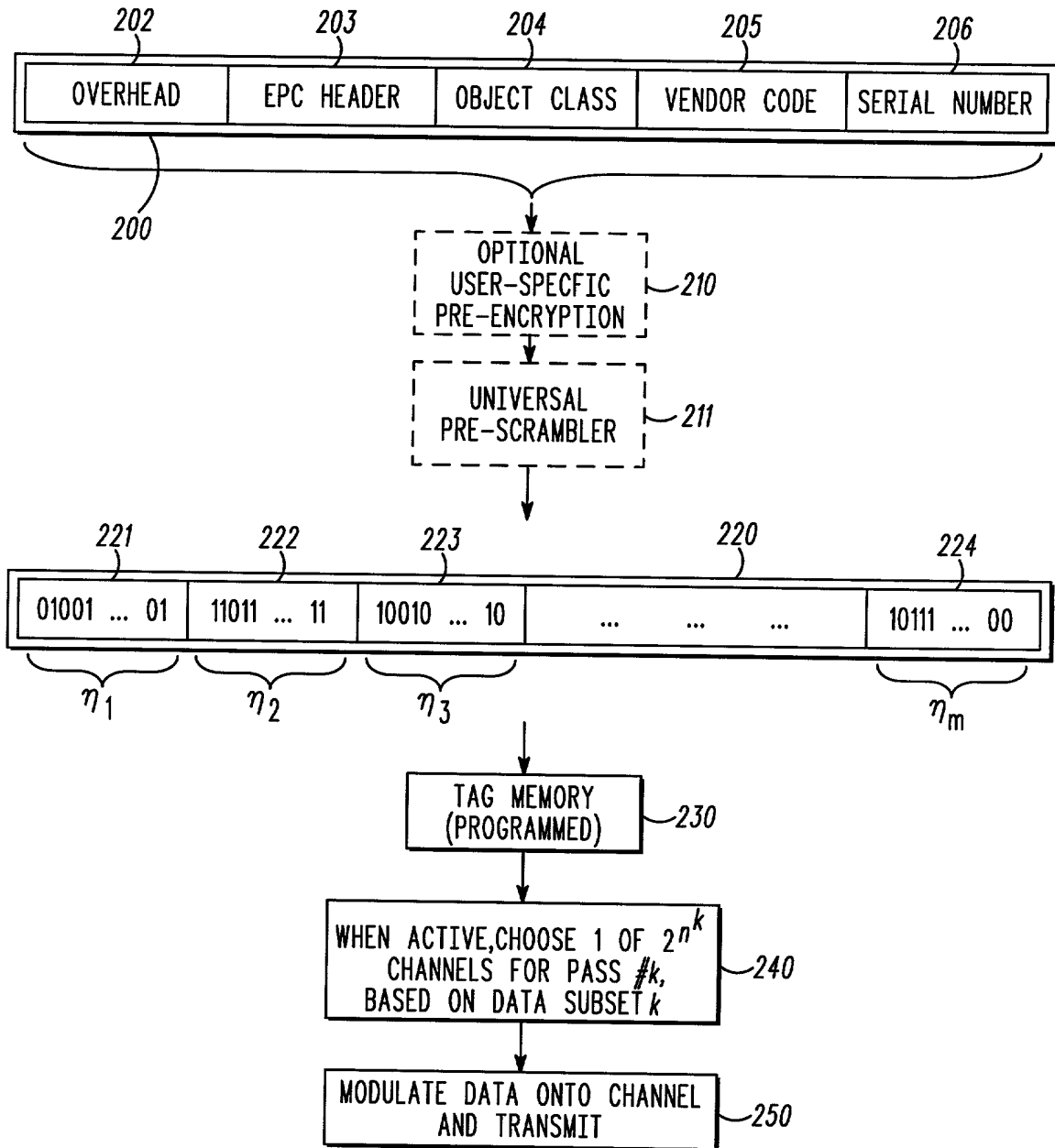


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**FIG. 1**

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**FIG. 2**

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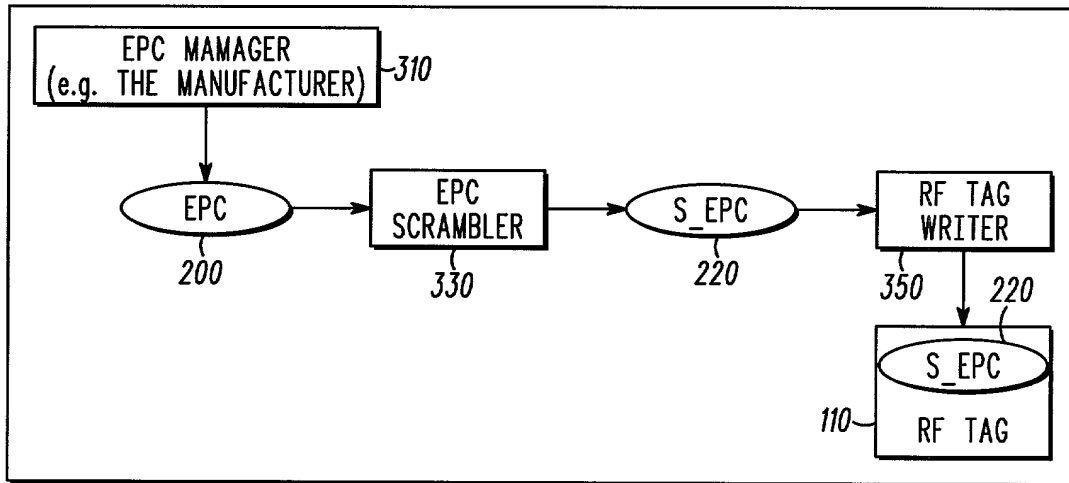


FIG. 3

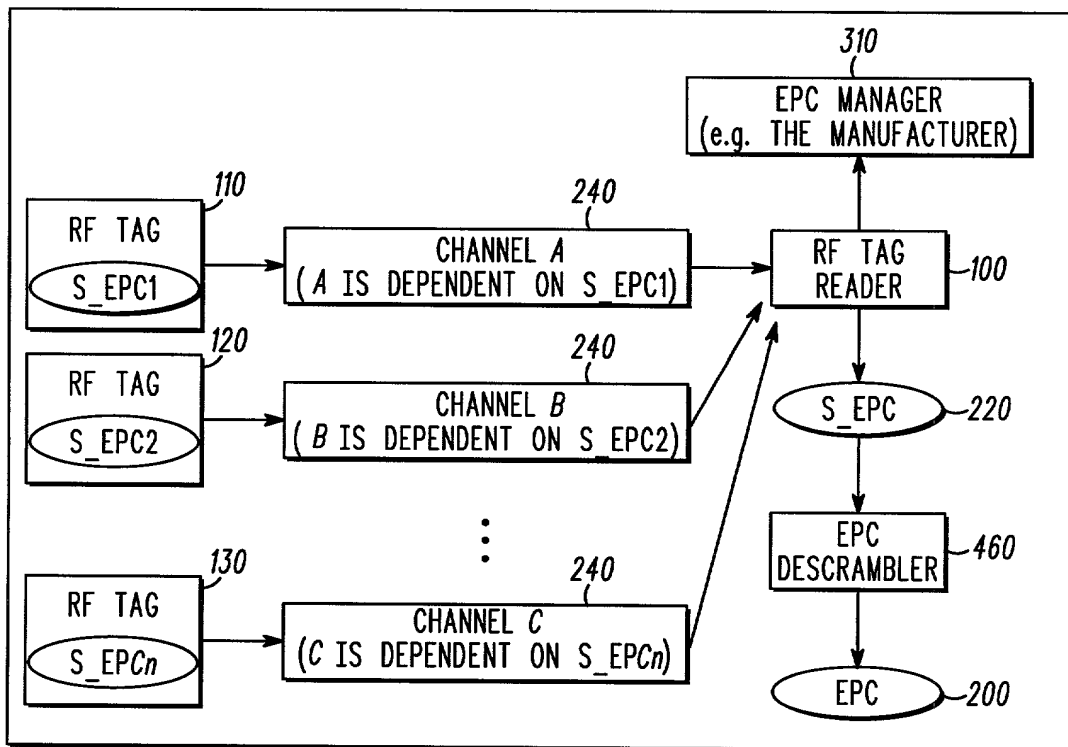


FIG. 4

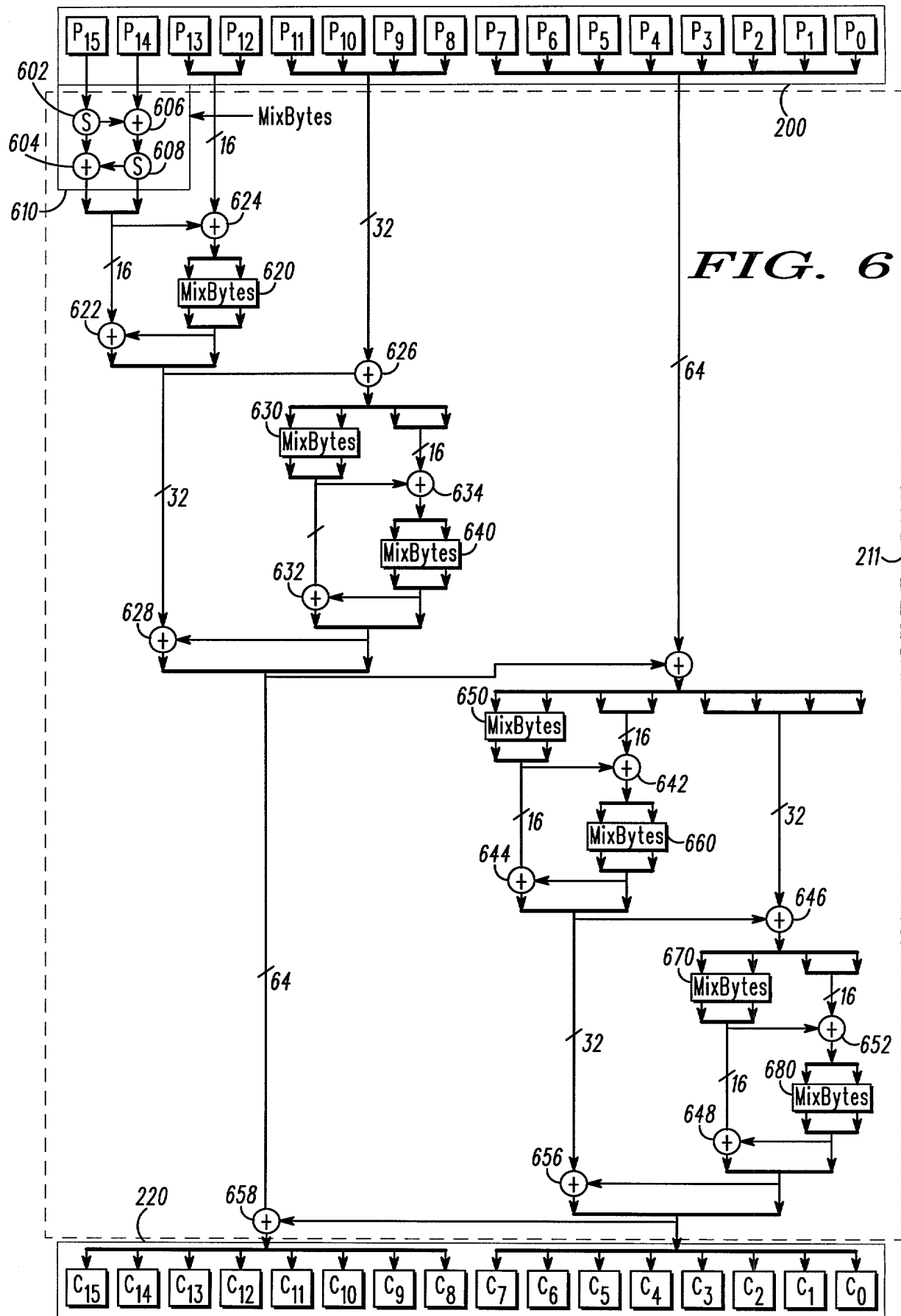
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510 SCRAMBLE (DATA, LENGTH) {  
    IF (LENGTH == 1)  
        RETURN (Sbox [DATA] ) ;  
    DATA. LEFT = SCRAMBLE (DATA. LEFT, LENGTH/2) ;  
    DATA. RIGHT ^= DATA LEFT ;  
    DATA. RIGHT = SCRAMBLE (DATA. RIGHT, LENGTH/2) ;  
    DATA. LEFT ^=DATA. RIGHT ;  
}

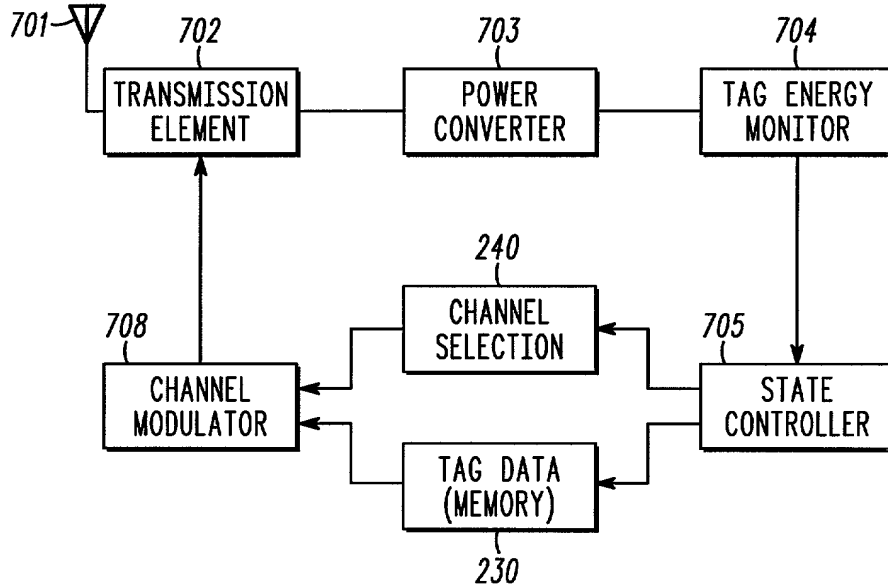
520 DESCRAMBLE (DATA, LENGTH) {  
    IF (LENGTH == 1)  
        RETURN (INVERSESbox [DATA] ) ;  
    DATA. LEFT ^=DATA. RIGHT ;  
    DATA. RIGHT = DESCRAMBLE (DATA. RIGHT, LENGTH/2) ;  
    DATA. RIGHT ^= DATA. LEFT ;  
    DATA. LEFT = DESCRAMBLE (DATA. LEFT, LENGTH/2) ;  
}

**FIG. 5**

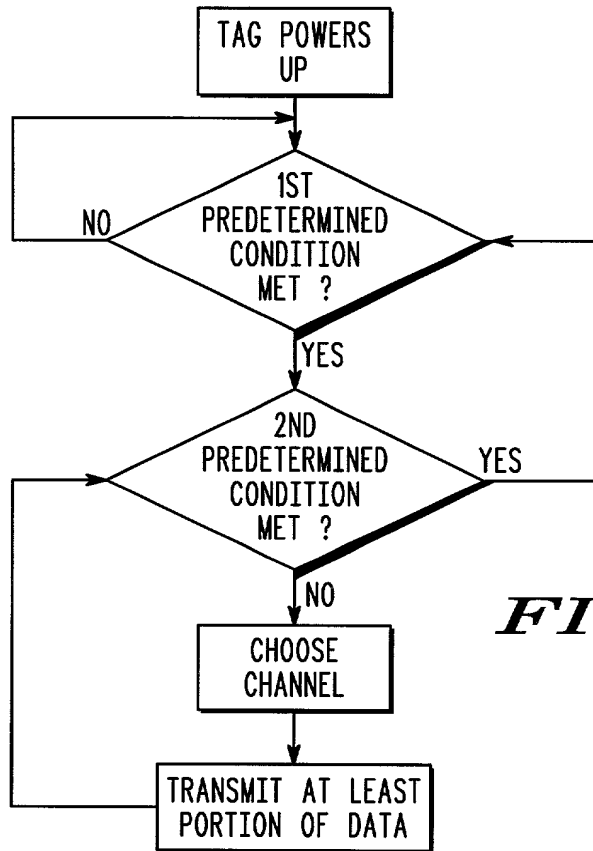
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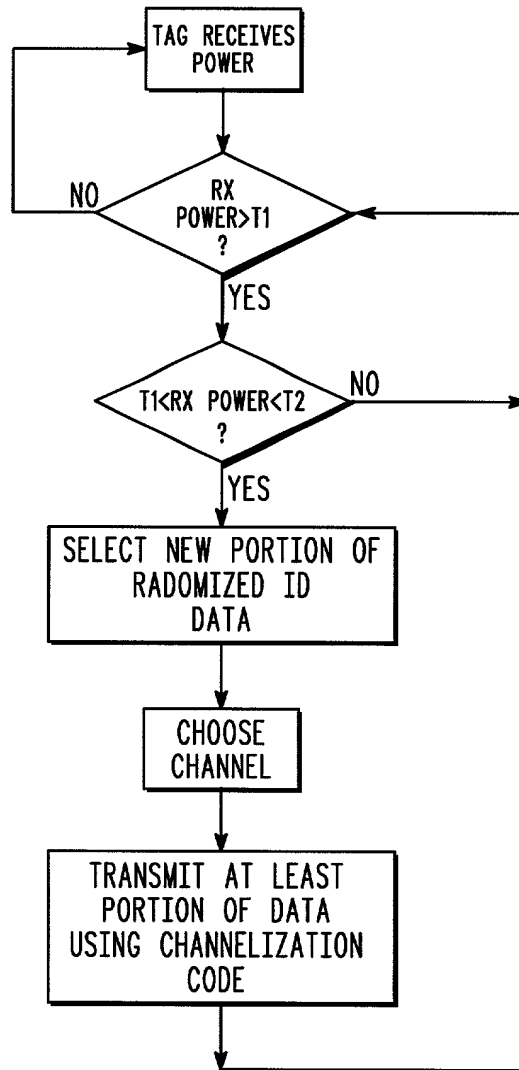


**FIG. 7**



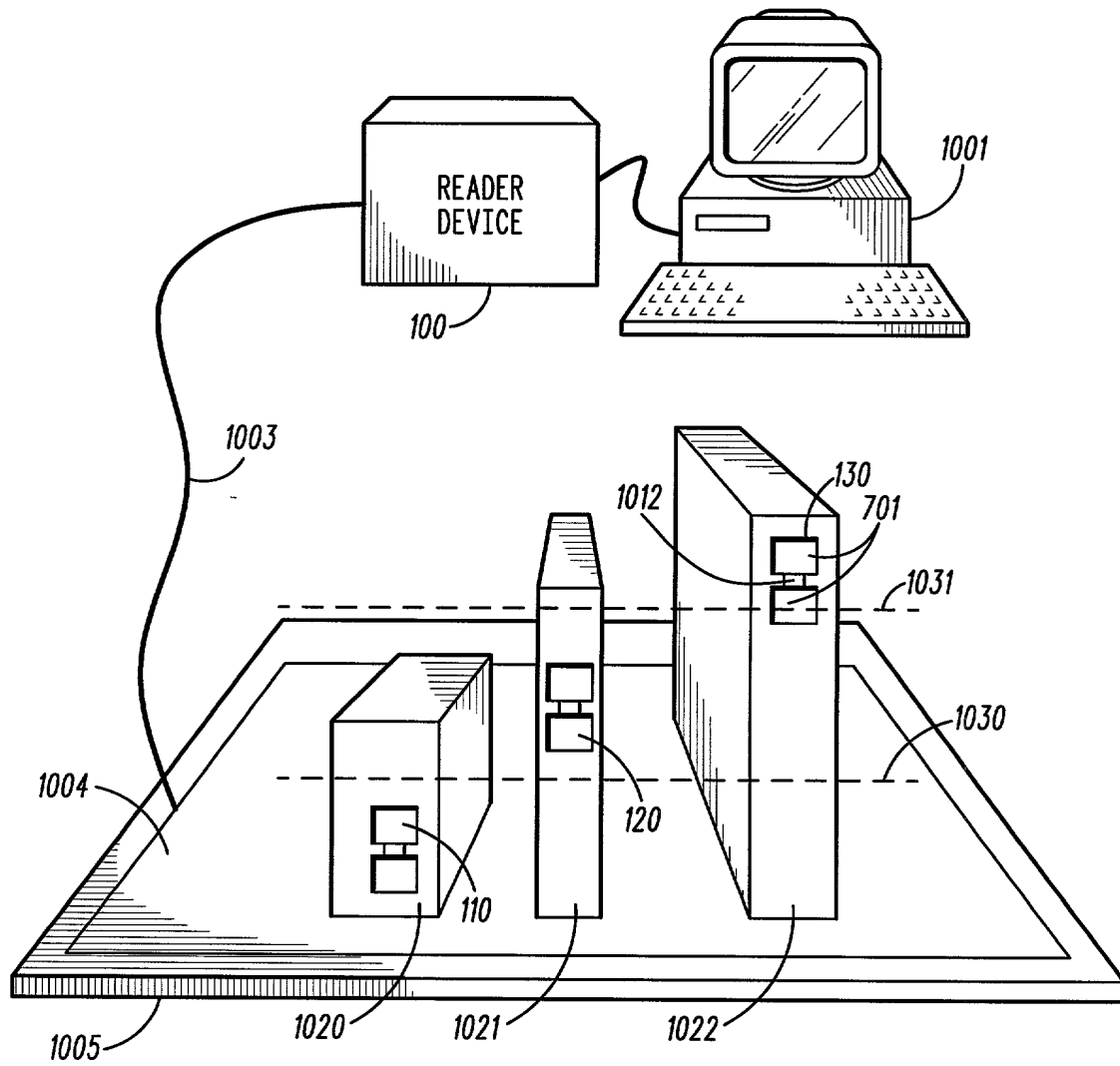
**FIG. 8**

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**FIG. 9**

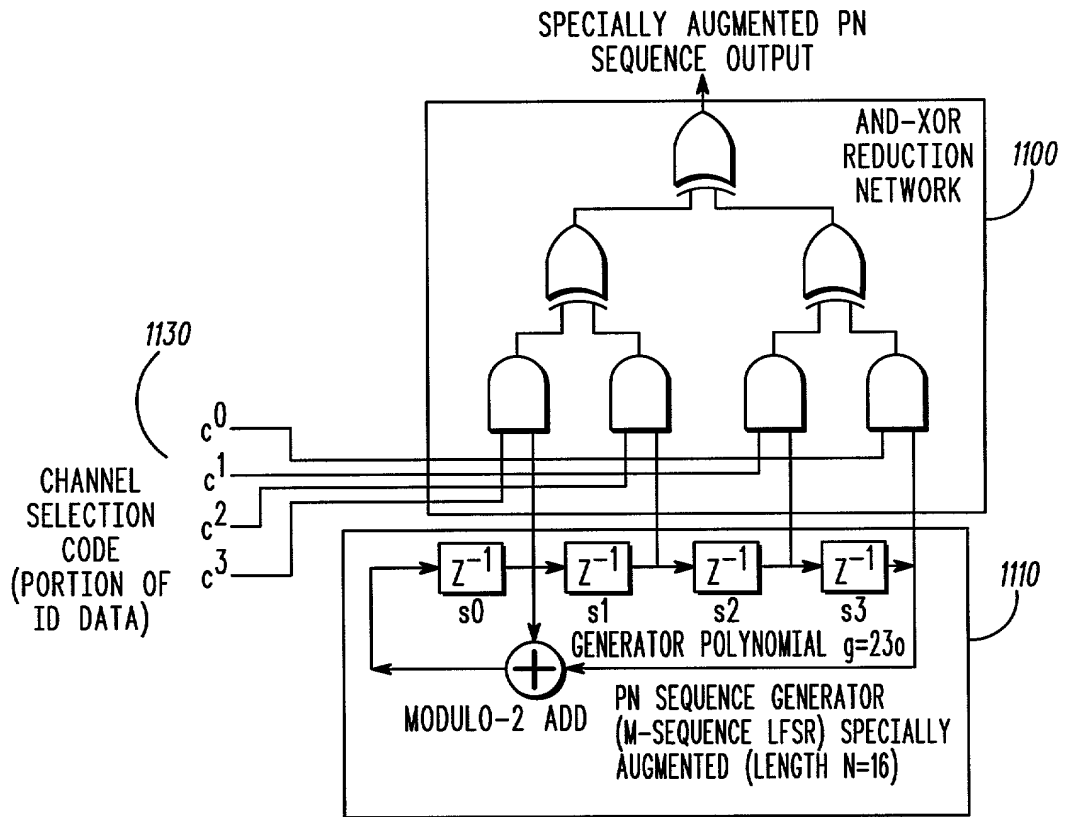
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**FIG. 10**



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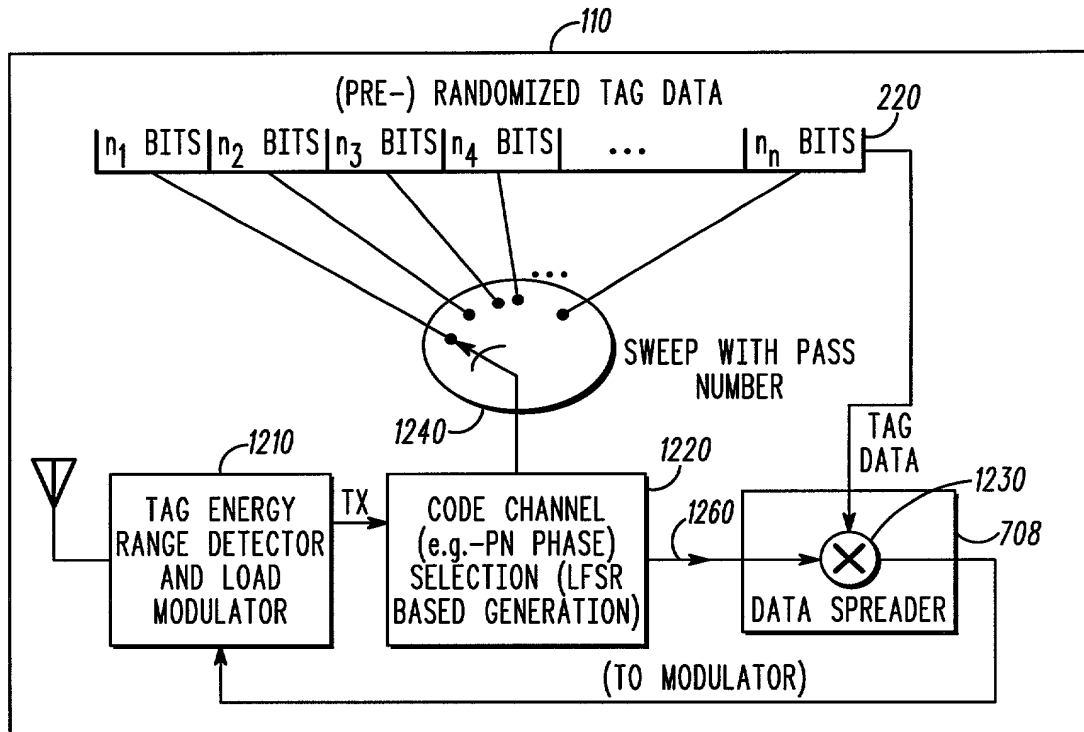


LFSR STATE TABLE

CLOCK CYCLE	s0	s1	s2	s3	DEC. STATE
0 (ZERO OUT)	1	1	1	1	15
1 (HELD)	1	1	1	1	15
2	0	1	1	1	7
3	1	0	1	1	11
4	0	1	0	1	5
5	1	0	1	0	10
6	1	1	0	1	13
7	0	1	1	0	6
8	0	0	1	1	3
9	1	0	0	1	9
10	0	1	0	0	4
11	0	0	1	0	2
12	0	0	0	1	1
13	1	0	0	0	8
14	1	1	0	0	12
15	1	1	1	0	14

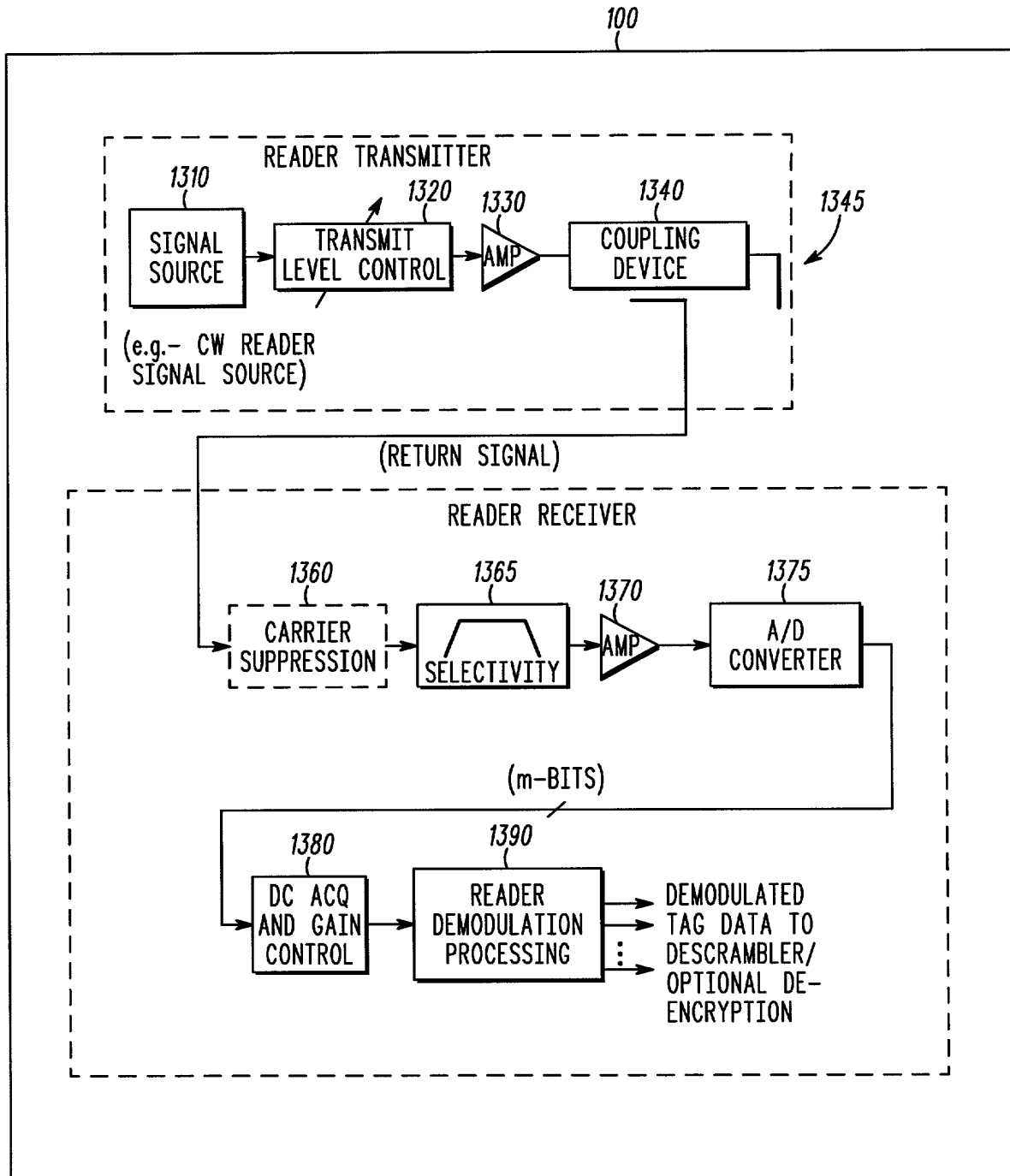
FIG. 11

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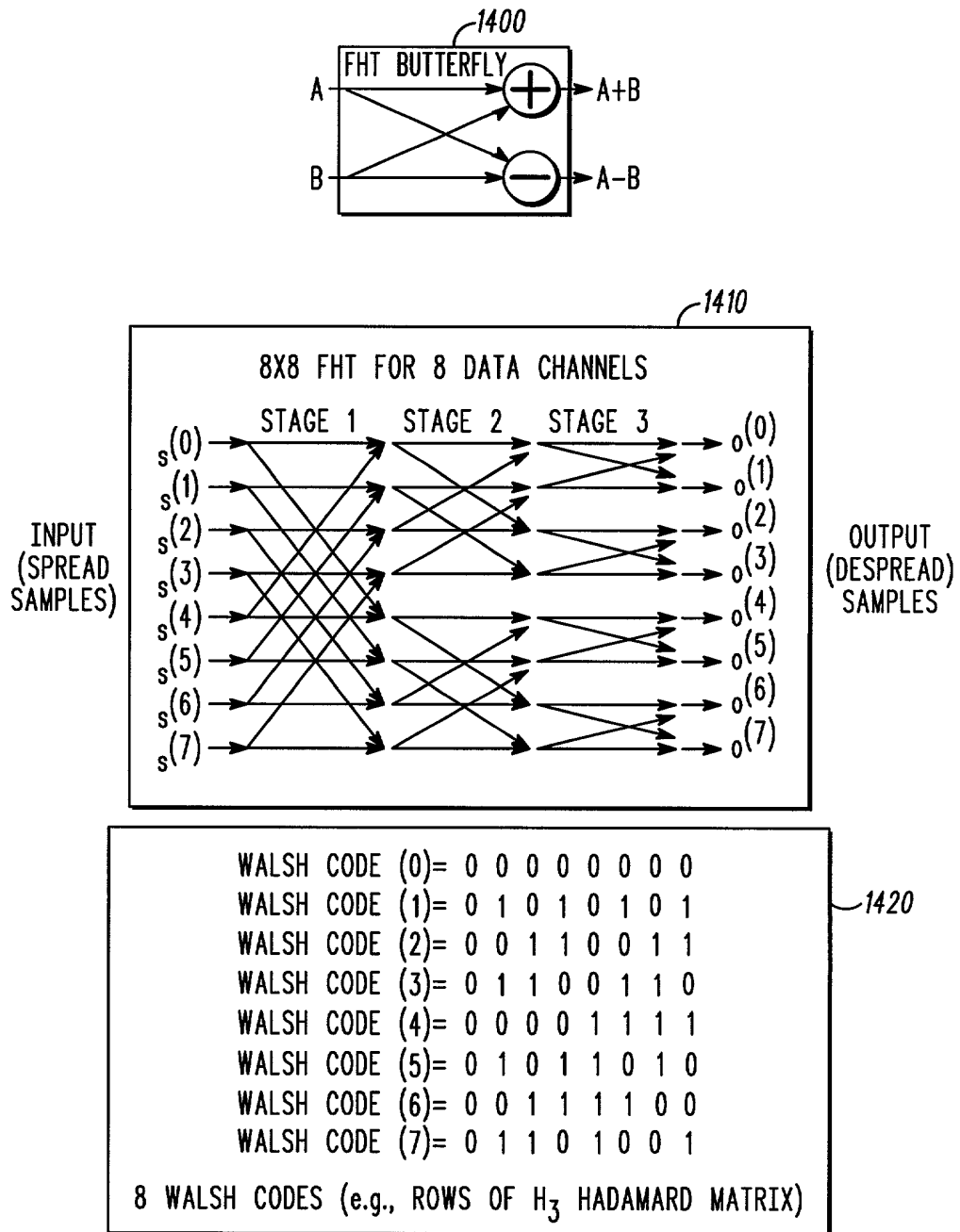
**FIG. 12**

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**FIG. 13**

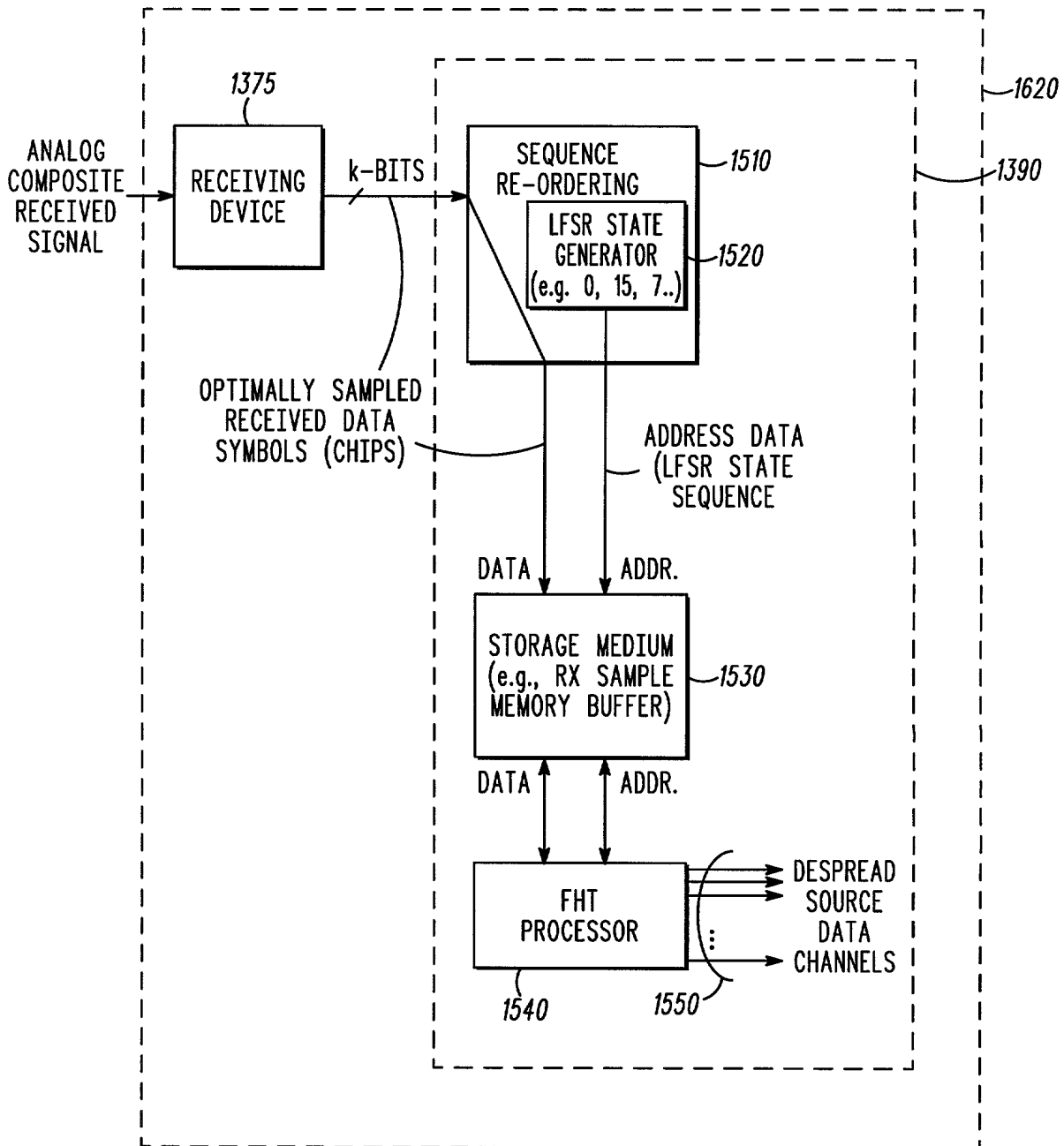
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$$(H_{n+1} = \begin{bmatrix} H_n & H_n \\ H_n & \overline{H_n} \end{bmatrix}, H_0 = 0)$$

FIG. 14

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**FIG. 15**

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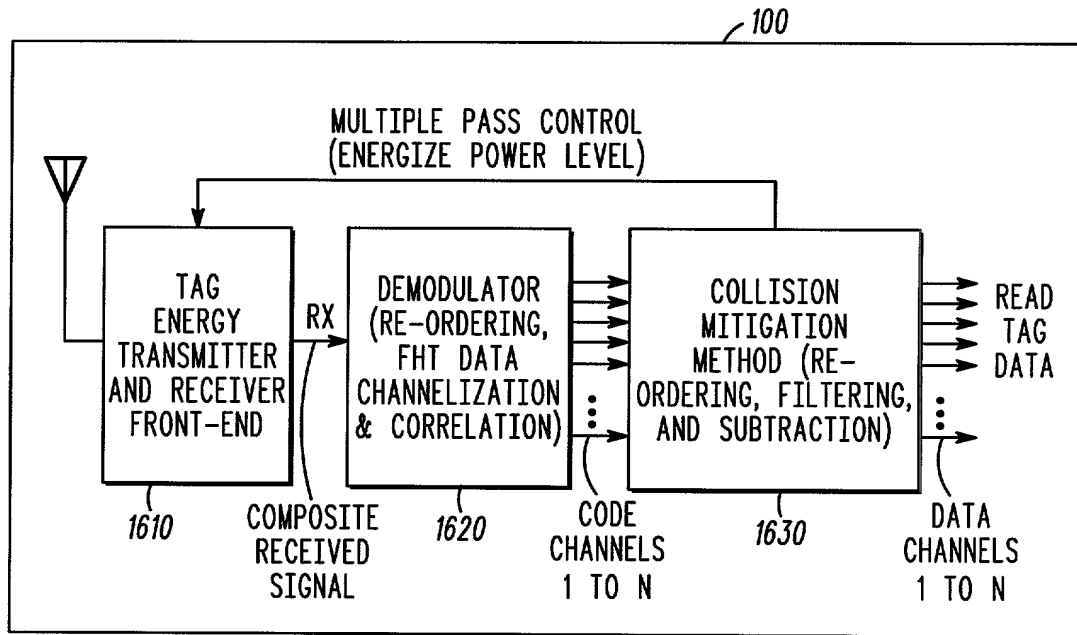
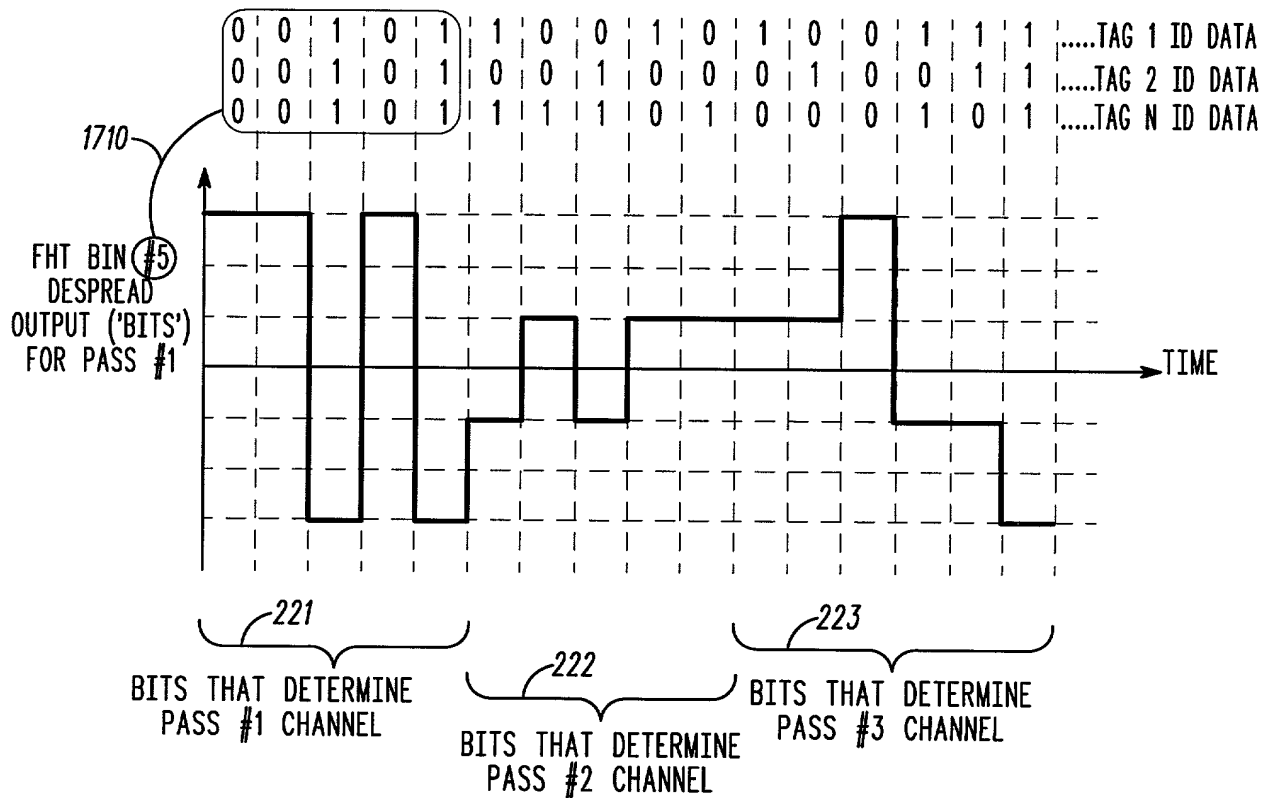
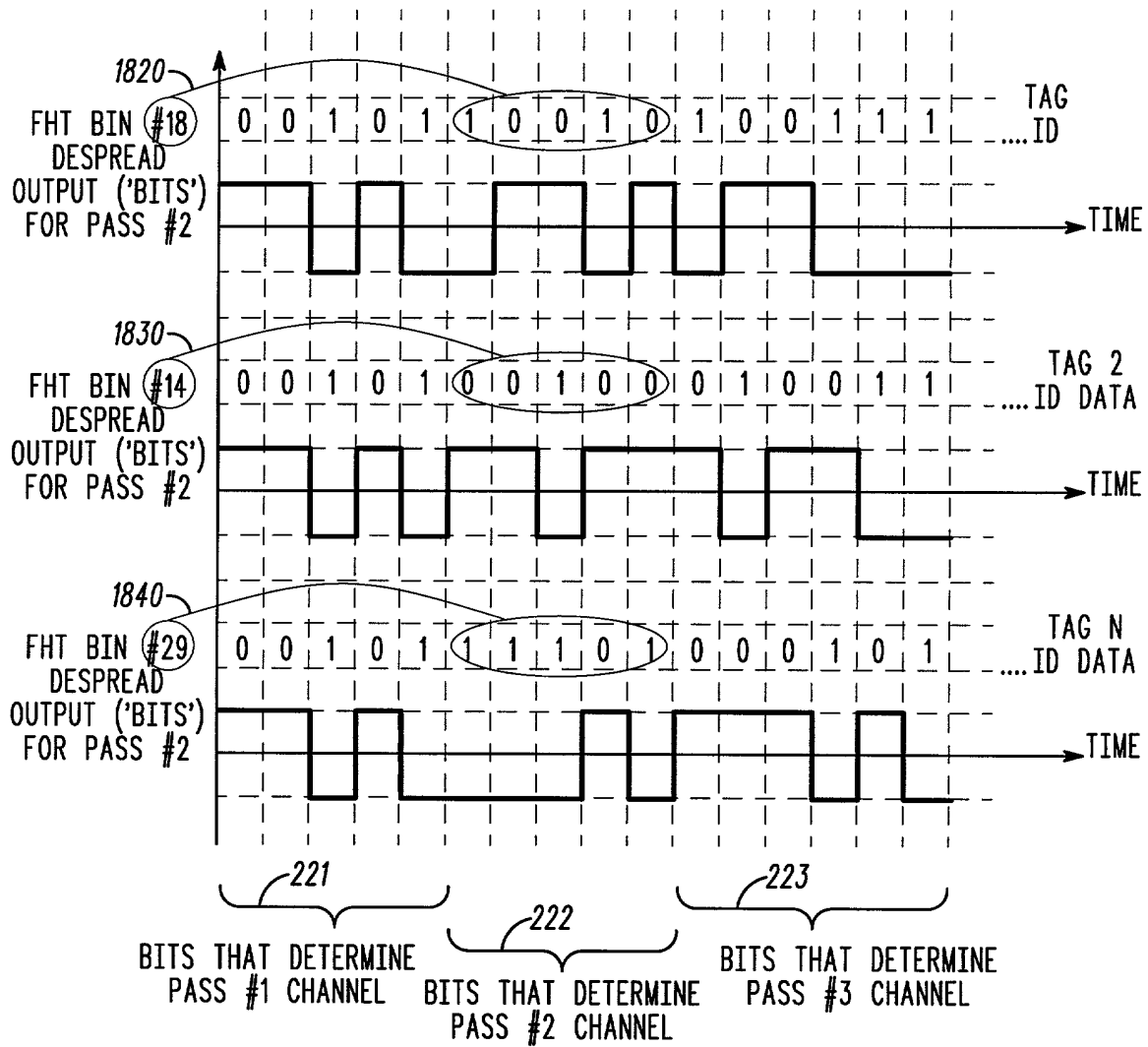


FIG. 16

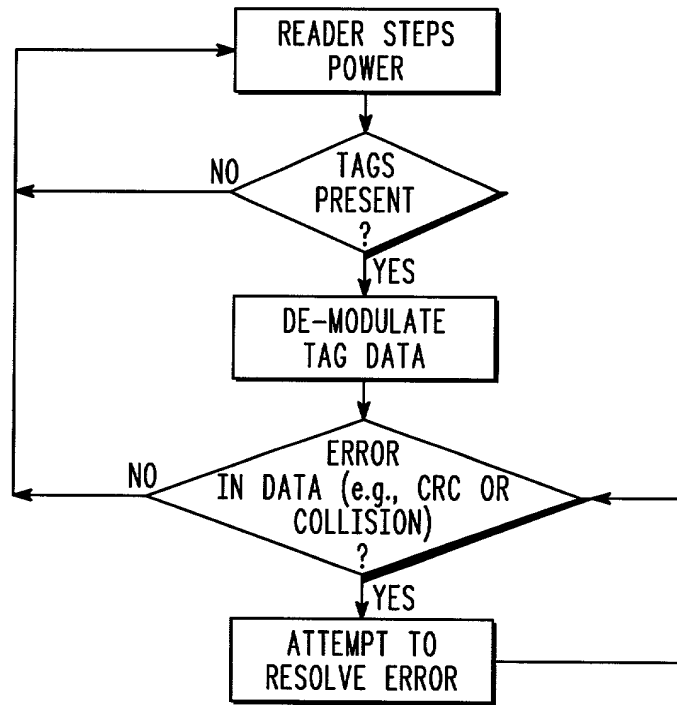
FIG. 17





**FIG. 18**

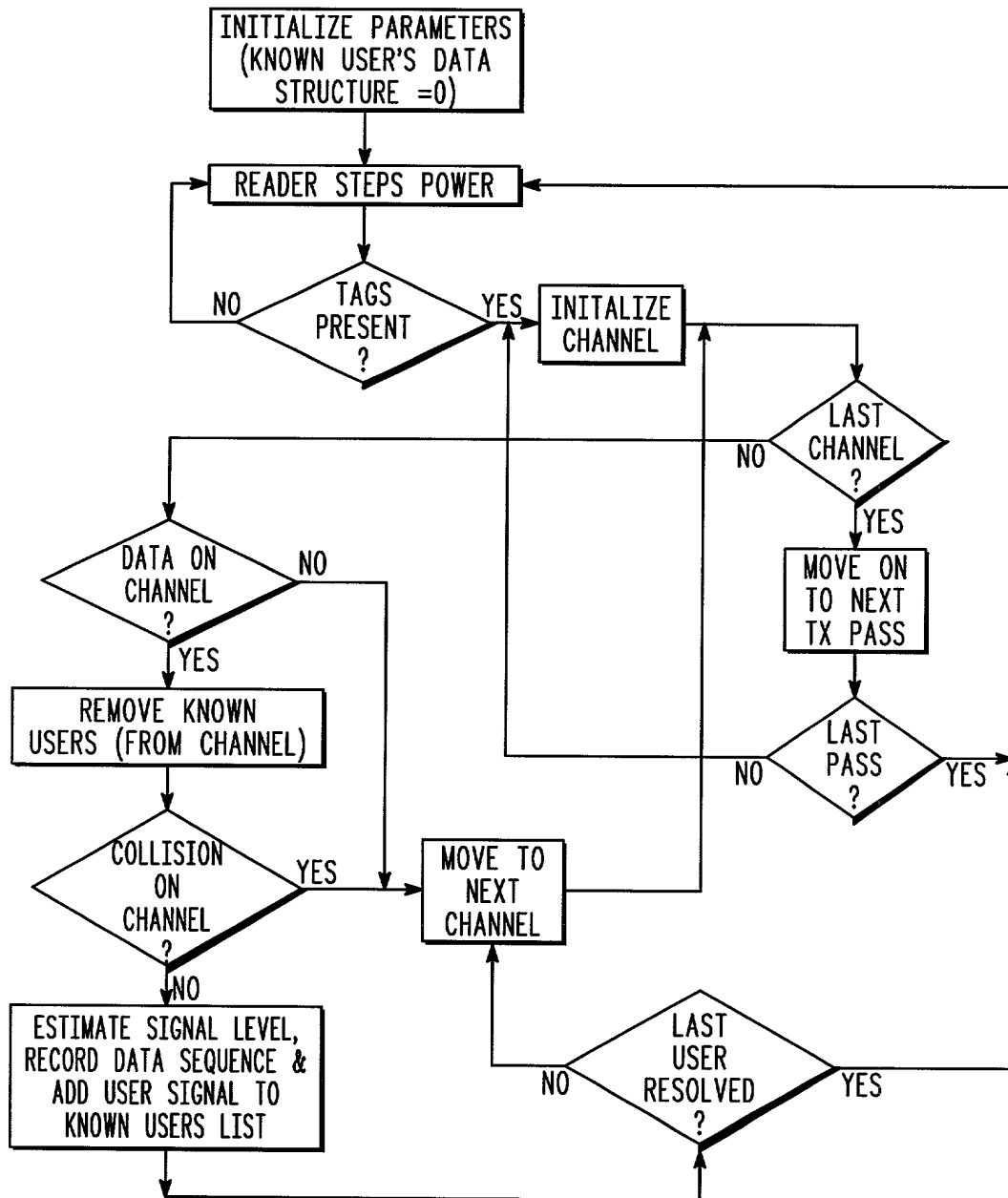
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**FIG. 19**



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**FIG. 20**

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CHANNEL NUMBER	#0	#1	#2	#3	#4	#5	#6	#7
PASS #1	①	2 6	4 8		③	⑦	⑤	
PASS #2	① 4 5	2 8			6 7			3
PASS #3	②			① 8	4 7		3	5 6
PASS #4			5	7	④	⑧	① 2 6	3
PASS #5	①		2	5 7	3	6 8	4	
PASS #6		4 8		5	1 3 6	2	7	
PASS #7		3 4 8		① 6		2 5		7
PASS #8		2 4	⑥			5 7 8	1 3	

LEGEND: CIRCLED ITEMS ARE NEWLY ID'd  
SHADED ITEMS ARE PREVIOUSLY ID'd

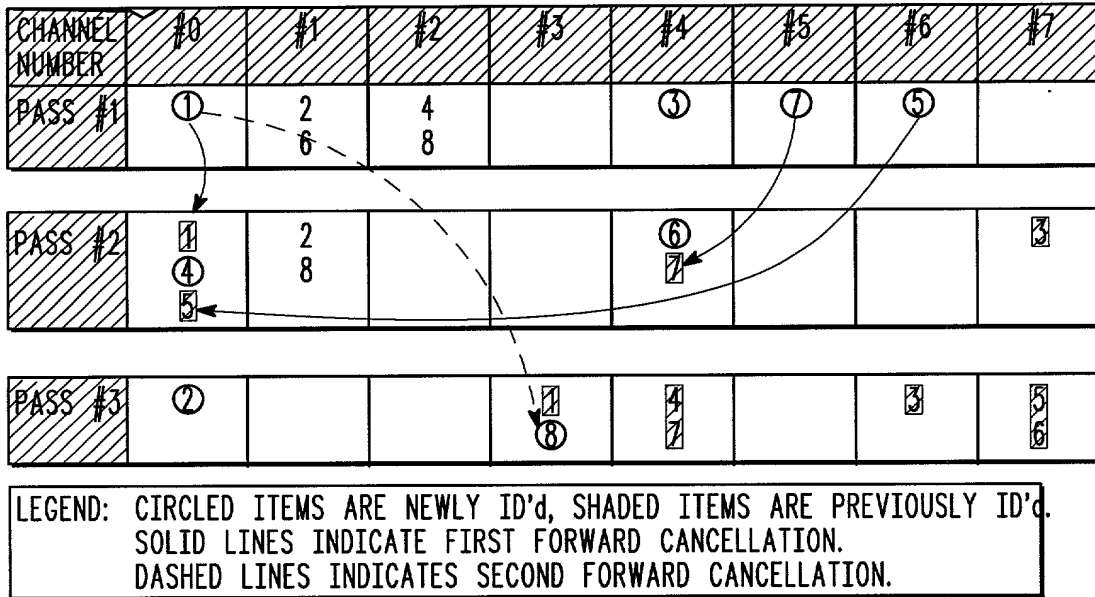
**FIG. 21**

```

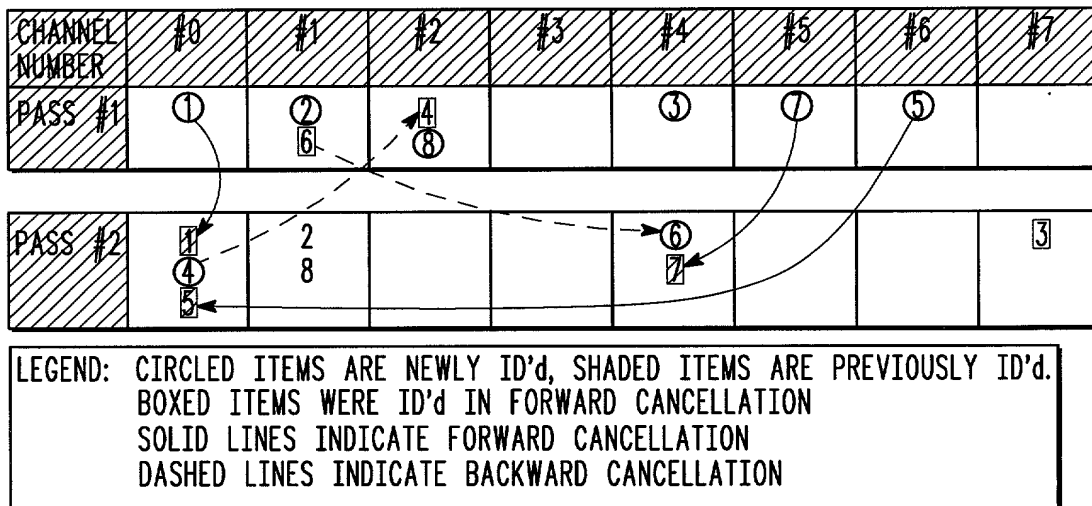
graph TD
    Start([START]) --> Init[2210  
POSITIVE ID's = 0  
UNKNOWN'S = 0  
TOTAL ITEMS MAX = 0]
    Init --> PassK[2220  
PERFORM PASS k  
k=k+1]
    PassK --> Channel[2230  
PERFORM CHANNEL ANALYSIS,  
FIND NEW ID's]
    Channel --> PosID[2240  
POSITIVE ID's =  
POSITIVE ID's + NEW ID's]
    PosID --> CollC[2250  
COUNT NUMBER OF CHANNELS  
WITH COLLISIONS C(k)]
    CollC --> CycleColl[CYCLE THROUGH COLLISIONS  
INDEX j=j+1]
    
    CycleColl --> Ant{WAS A  
COLLISION ON CHANNEL j  
ANTICIPATED?}
    Ant -- YES --> YesUnkn[2260  
UNKNOWN'S=UNKNOWN'S]
    Ant -- NO --> NoUnkn[2270  
UNKNOWN'S=UNKNOWN'S + 2]
    YesUnkn --> CycleColl
    NoUnkn --> CycleColl
    
    CycleColl --> TotEq[2280  
POSITIVE ID's + UNKNOWN'S  
= TOTAL ITEMS]
    TotEq --> TotMax{TOTAL  
ITEMS > TOTAL  
ITEMS MAX?}
    TotMax -- YES --> SetMax[TOTAL ITEMS  
MAX = TOTAL ITEMS]
    TotMax -- NO --> PosLess{2290  
POSITIVE ID's  
< TOTAL ITEMS MAX?}
    PosLess -- YES --> JoinA((A))
    PosLess -- NO --> ConfComp[COMPUTE INVENTORY  
CONFIDENCE BASED ON NUMBER  
OF PASSES AND C(k)  
RECORD]
    ConfComp --> ConfSat{2296  
CONFIDENCE  
SATISFIED?}
    ConfSat -- YES --> End([END])
    ConfSat -- NO --> JoinA
    
    JoinA --> ResetUnkn[2295  
RESET UNKNOWN'S = 0]
    ResetUnkn --> DetNext[DETERMINE WHERE ID'd  
ITEMS WILL GO ON  
NEXT PASS]
    DetNext --> PassK

```

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**FIG. 23**



**FIG. 24**